

Topic 01: Business Process Improvement through Analytics – a Review and Application to a Health Care Case

Business Process Improvement (BPI) has been an interesting topic for academia and practice as organizations constantly strive to improve operational efficiency, which translates into improving processes. As part of the business process management (BPM) lifecycle, BPI thereby relates to the continuous improvement of processes, i.e., the logical step after documenting and monitoring processes. Hence, there are various approaches which aim at systematically improving processes, such as business process simulation (BPS), predictive analytics, or process mining.

This master thesis focuses on discussing fundamental analytical approaches in general, and reviewing BPS as measure for BPI in particular. In this regard, special attention should be paid to discussing if BPS corresponds to queuing system simulation as in Law (2015). With application to the case of *Miller Pain Treatment Center*, a simulation model should be created with high methodological rigor to answer the question: how can the process be improve and its sustainable performance improvement secured? Insights from the literature review and the application case should be combined to provide recommendations on BPI through analytics and BPS.

The objectives of this thesis are to:

- discuss fundamental analytics approaches for BPI in general and review purposes, applications and limitations of BPS in particular,
- apply this to the case study of *Miller Pain Treatment Center*,
- and provide recommendations on BPI through analytics and BPS.

Basic Literature:

Law, A. (2015): Simulation modeling and analysis. McGraw-Hill Education, 5. ed, New York

Lee, E. K., Atallah, H. Y., Wright, M. D., Post, E. T., Thomas IV, C., Wu, D. T., & Haley Jr, L. L. (2015): Transforming hospital emergency department workflow and patient care. *Interfaces*, 45(1), 58-82.

Bisogno, S., Calabrese, A., Gastaldi, M. and Levialdi Ghiron, N. (2016): Combining modelling and simulation approaches: How to measure performance of business processes. *Business Process Management Journal*, 22(1) , 56-74.

Case Study:

Chambers, C., & Williams, K. (2017): Case—Miller Pain Treatment Center. *INFORMS Transactions on Education*, 17(3), 121-127, <https://doi.org/10.1287/ited.2017.0176cs>